

# 2002 Fire Season Severity Assessment Northwest Geographic Area

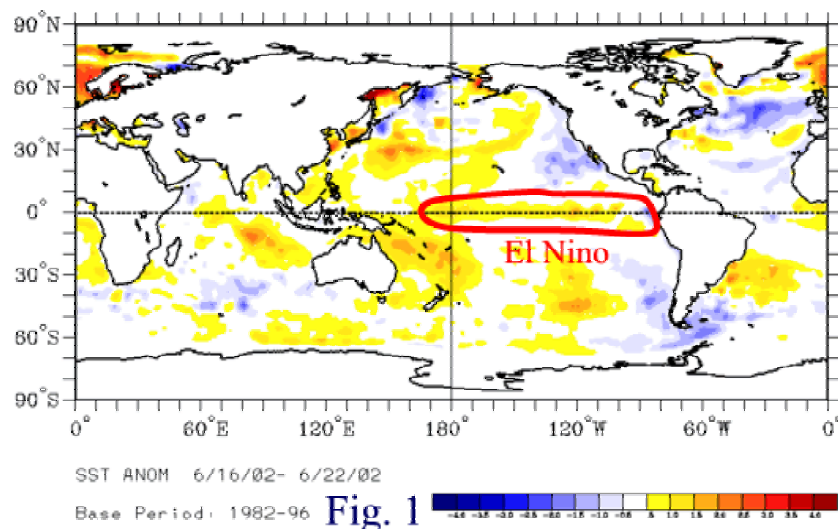
Final Version Issued 07/08/02

The following fire season assessment is based upon seasonal precipitation patterns, snowpack and snowmelt data, fire danger and fuel moisture information, and long range weather forecasts. This is the final version of preliminary assessments dated April 4, May 9 and June 10. Weather, fuel moisture and fire danger is correlated with historical fire records to determine the potential severity of the fire season.

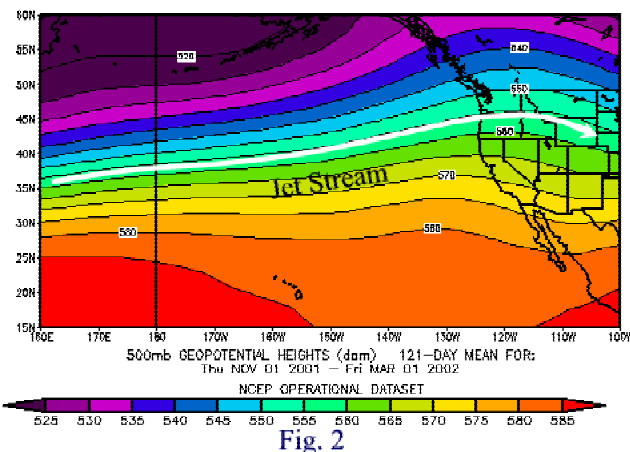
The winter of 2001-2002 experienced a return of near or above normal precipitation throughout the Pacific Northwest. The weak La Nina, which greatly influenced the drought of 2000-2001, came to an end over the winter with a return to more normal sea

surface temperatures. Weak El Nino conditions (warmer than usual sea surface temperatures along the Equator in the Pacific) have since developed during May and June (figure 1). La Nina and El Nino are phases of a naturally occurring climatic cycle in the tropical Pacific Ocean known as the Southern Oscillation, which occurs at intervals of two to seven years. Long range models have been consistent in developing a weak to

moderate El Nino this year which would likely continue through the coming winter. A developing El Nino appears to have little affect on summer weather patterns in the Pacific Northwest. However, this fall and winter could experience drier conditions again due to El Nino. The last El Nino, which occurred in 1997-1998, was strong but short-lived.



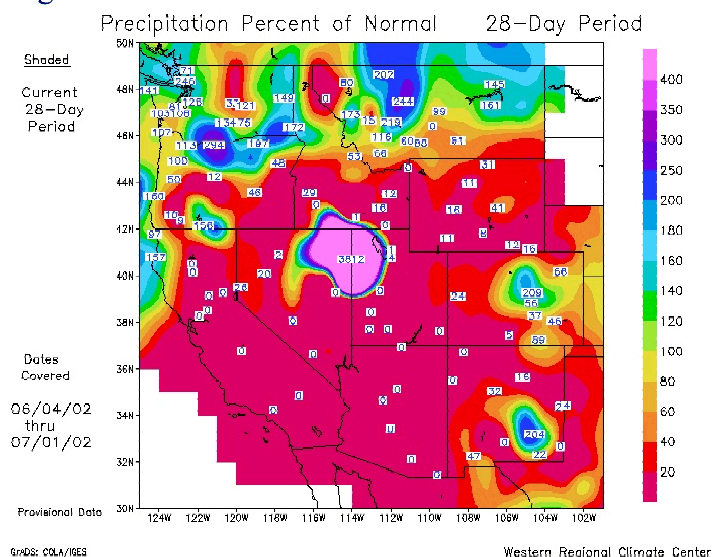
## Average 500mb Flow/Jet Stream Winter 2001-2002



Weather patterns were much different this winter than last year. A “split” jet stream kept the Pacific Northwest abnormally dry last winter resulting in snowpacks that were only 30-55% of normal. Drought conditions developed and continued through the summer and fall. The weather pattern finally changed in November when a strong jet stream formed over the northern Pacific Ocean (figure 2). A series of strong storms blasted into Washington and Oregon in December and January producing heavy rain and deep mountain snow. Drier weather returned in

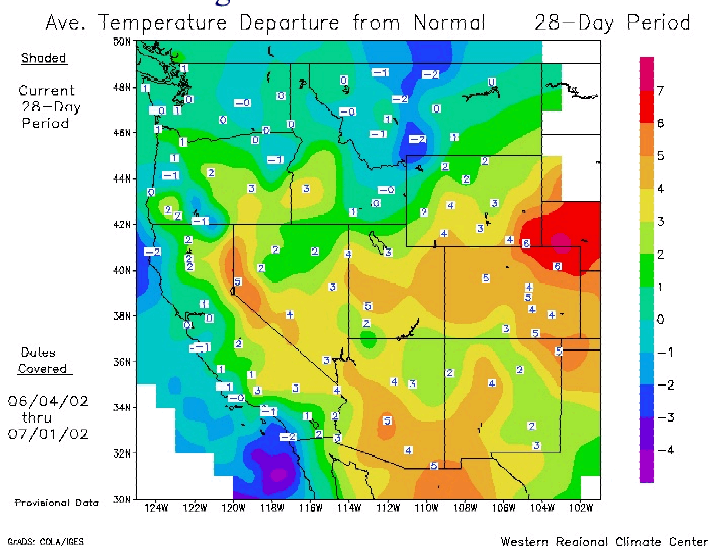
February, but March was wet again. April was wet in south-central Oregon but drier than normal in western Oregon and eastern Washington. May was cool and dry throughout the Geographic Area with

Fig. 3



many locations receiving 50% or less of precipitation. June brought a “mixed-bag” of weather to the area. Near to above normal precipitation fell in western Washington, northern Oregon, the Klamath Falls area in south-central Oregon, and in portions of eastern Washington (figure 3). Heavy rain fell June 28 in western Washington and northwestern Oregon with many locations recording an inch or more. Meanwhile, southern and central Oregon remained dry. Medford recorded only .03 inches for the month and Redmond .05 inches. Temperatures averaged 2-3 degrees warmer than usual in southwestern and southeastern Oregon, but were near normal elsewhere (figure 4).

Fig. 4

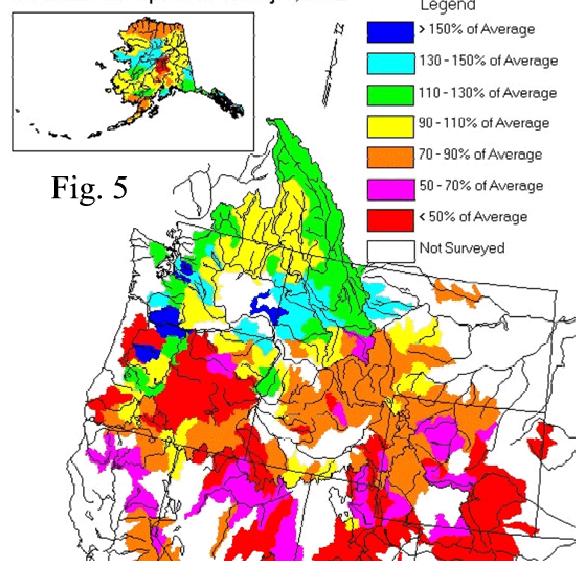


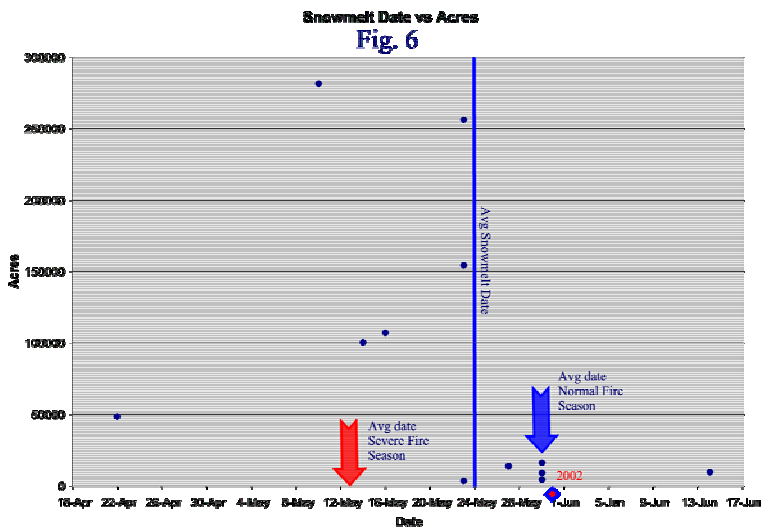
May 1st snowpacks (figure 5) ranged from 110-155% of normal in the Washington and Oregon Cascades. Most Snotel sites recorded 2 to 3 times the water content of snow compared to last winter. Northeast Washington snowpacks were 105-120% of normal. Most snowpacks in eastern and southwestern Oregon were 80-110% average. However, there were a few dry areas which had significant snowmelt in

April. The John Day and Malheur River Basins recorded only 25-35% of their normal snowpack on May 1. A slow but steady snowmelt continued during May and June. As of July 1, snow still remained in the Washington and northern Oregon Cascades above 5,500 ft msl.

Based on a selection of 39 Snotel sites (2600 to 7900 ft) covering the major river basins in Washington and Oregon, the snowmelt this year was 2-3 weeks later than 2001. The date of snowmelt is a good indicator of the overall severity of the fire season in the Northwest (figure 6). An early

Mountain Snowpack as of May 1, 2002

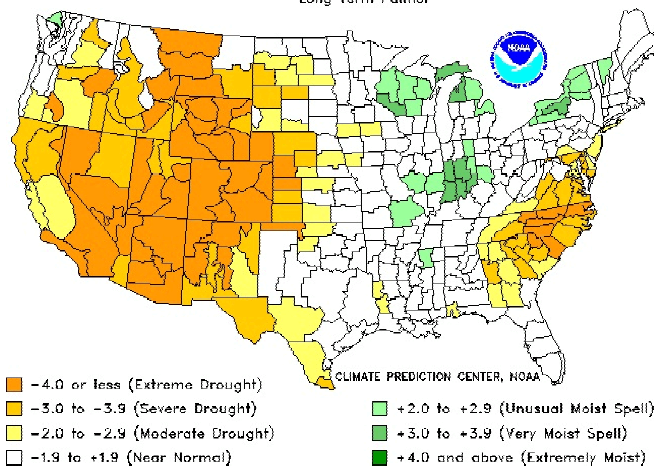




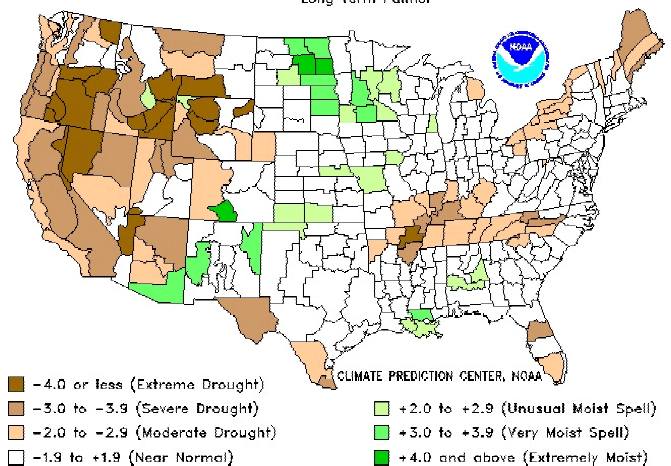
snowmelt correlates with above average fire seasons (acreage burned) while late snowmelt dates correlate with average or normal fire seasons.

The June 29 Palmer Drought Severity Index (figure 7) reflected the dryness experienced in May and June. Western Washington and most of western Oregon were near normal. However, eastern Oregon and portions of eastern Washington are now classified in moderate to severe drought. The Rogue Valley of southwestern Oregon has also slipped into moderate drought. However, this is still better than 2001 when Oregon and much of Washington were in severe to extreme drought (figure 8).

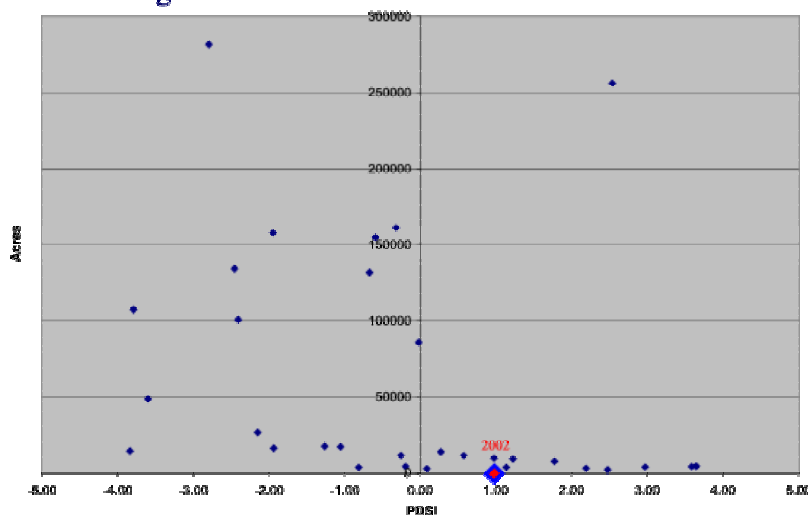
**Fig. 7** Drought Severity Index by Division  
Weekly Value for Period Ending 29 JUN 2002  
Long Term Palmer



**Fig. 8** Drought Severity Index by Division  
Weekly Value for Period Ending 30 JUN 2001  
Long Term Palmer



**Fig. 9** Palmer Drought vs Acreage



The average Palmer Drought Index is also a good indicator of the potential fire season severity in the Pacific Northwest. When the average drought index (sixteen climate zones in Washington and Oregon) is positive, the probability of a severe fire season is low. When the average is negative, the probability is high. This year's average is +1.00 (figure 9).

The June 25 U.S. Drought Monitor (figure 10) has eastern Oregon classified as abnormally dry with areas of moderate drought centered around John Day and in portions of the Vale and Burns BLM districts. This represents a slight expansion of drought in eastern Oregon since early June.

Long range weather forecasts are based upon weak El Nino conditions in the tropical Pacific Ocean this summer and a moderate El Nino this winter. The 30 day forecast for July slightly favors drier than normal weather east of the Cascades and equal chances of wet or dry conditions from the Cascade crest westward (figure 11). The temperature forecast slightly favors warmer than usual conditions. The 90 day forecast for July through September again slightly favors drier and warmer than normal conditions through the summer. July and August are typically dry months, so this forecast appears to be consistent with climatology. October should be seasonal with a better chance of rain and cooler temperatures. The lightning threat significantly decreases around the middle of September

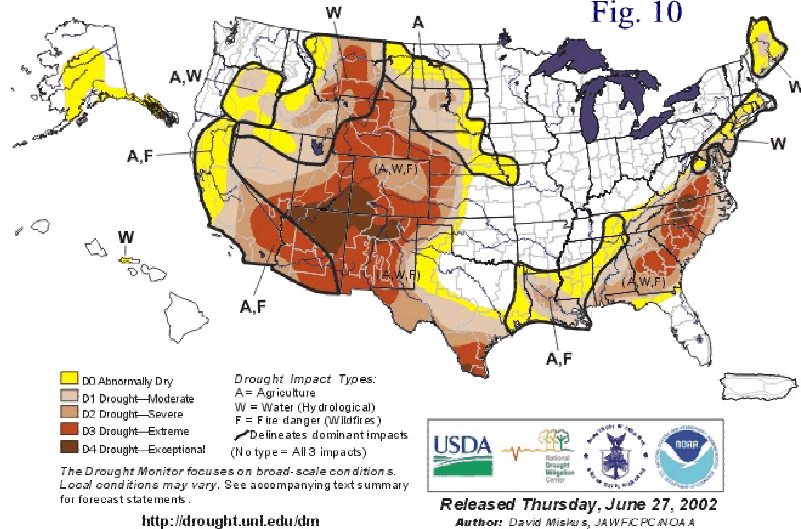
#### Assessment – The winter of 2001-2002

experienced a return of near or above normal precipitation in western Washington, western Oregon, the Cascades and the higher eastern Washington and eastern Oregon mountains. Ample moisture ended last year's drought in these areas. However, less precipitation fell east of the Cascades and lingering drought still affects the mid and lower elevations in eastern Oregon and eastern Washington. June's dry weather in central and southern Oregon expanded the area of moderate drought in these areas. The lower elevations in southwestern Oregon have also become very dry with little or no June rainfall. Mountain snowpacks in the Cascades were 110-155% of normal with snowmelt 2-3 weeks later than last year. Snow at the higher elevations of the Cascades could very well linger into the first week of July. Snow still remains in the Washington and northern Oregon Cascades as of early July. Snowpacks east of the Cascades were generally 80-110% of normal with the Blue Mountain snowpack west of Interstate 84 receiving the least. The early snowmelt in the John Day and Malheur River Basins was similar to the drought years of 2000 and 2001. Correlating

## U.S. Drought Monitor June 25, 2002

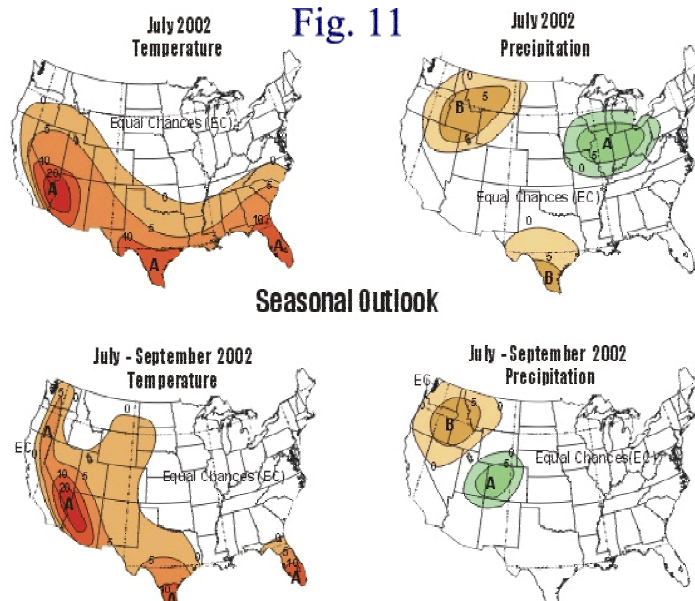
Valid 8 a.m. EDT

Fig. 10



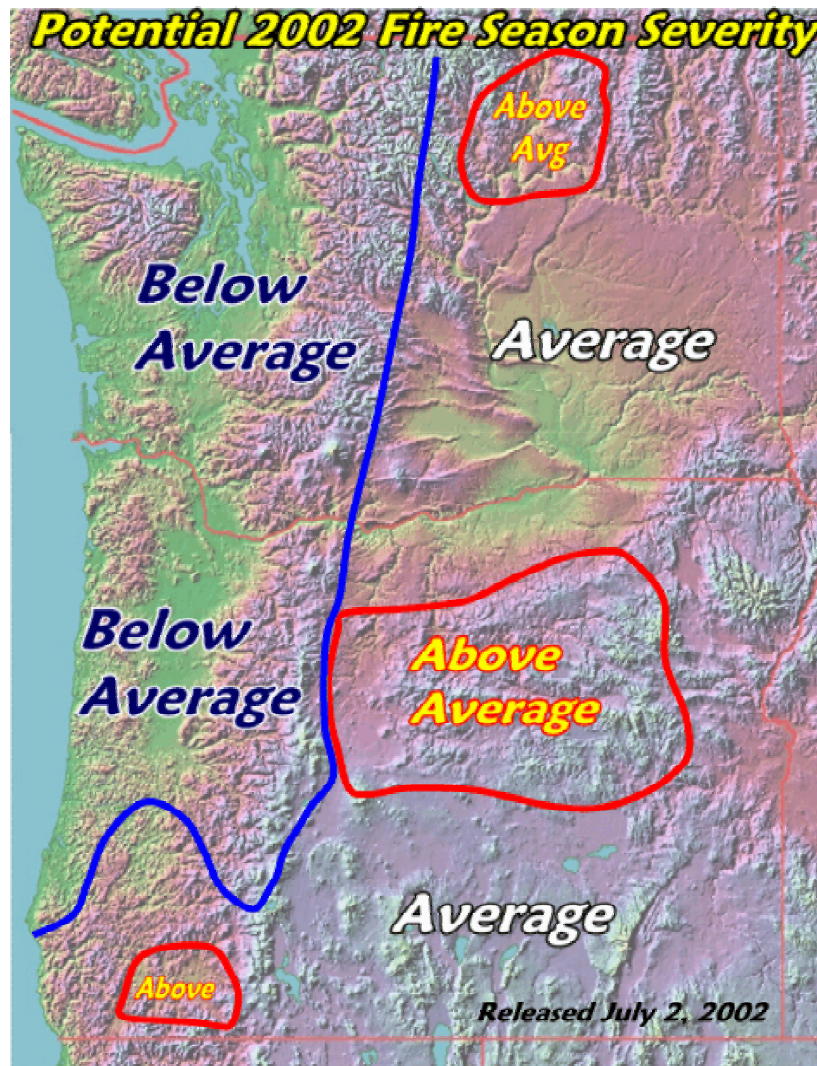
## Monthly Outlook

Fig. 11



Release Date: June 13, 2002

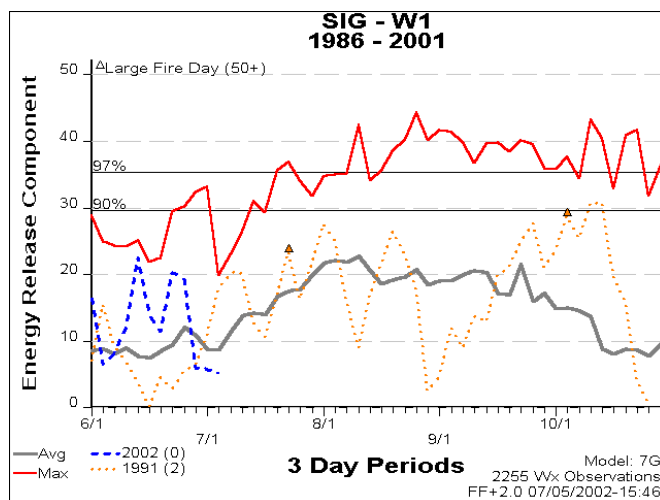
seasonal precipitation, snowpack data, the late snowmelt date, drought indices and long range weather forecasts with past fire seasons indicates that **overall, the Northwest Geographic Area will have an**



**AVERAGE (NORMAL) FIRE SEASON** this summer (see accompanying figure). During a normal fire season, the Northwest can expect 60-65 fires of 100 acres or more, 20-25 fires of 1,000 plus acres for a total of about 100,000 acres. However, the potential fire severity will vary considerably across the Geographic Area. **A Below Normal Fire Season is expected from of the Cascades westward** due to heavy mountain snow and above normal precipitation. Meanwhile, an **Above Average Fire Season is possible in portions of central, eastern and southwestern Oregon, and around the Okanogan Valley in north-central Washington** due to lingering drought and low fuel moisture. **The greatest fire threat east of the Cascades will be in the lower and mid elevations where grass will be the primary carrier of fire.** All indications point to fewer large fires (especially in timber fuels) and less acreage burned than the 2000 and 2001 fire seasons. However, a few large fires can still be expected. The amount of dry lightning this

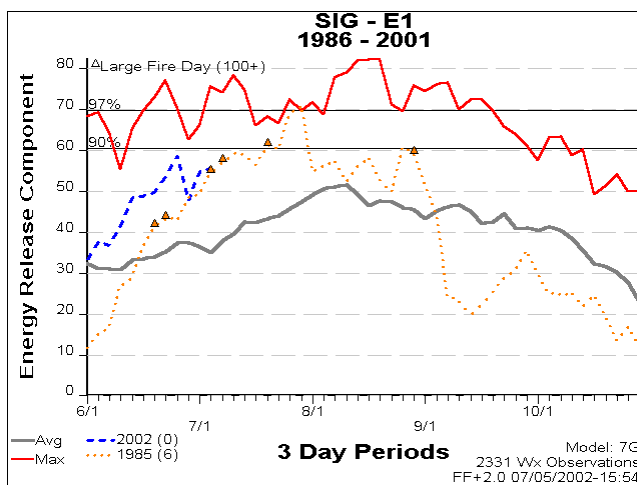
summer will also be a factor in determining the character of the fire season east of the Cascades. Any threat west of the Cascade crest will likely come during the few "East Wind" days in September and early October.

Western Washington. Near to above normal rain fell in June throughout western Washington. Record daily rainfall totals were set the 28<sup>th</sup> with many locations receiving an inch of more. Temperatures were near normal for the month. Snow still remained in the Cascades above 5,500 ft. Palmer Drought Indices show normal conditions throughout the area. July and August will be seasonally warm and dry. The Energy Release Component (ERC)

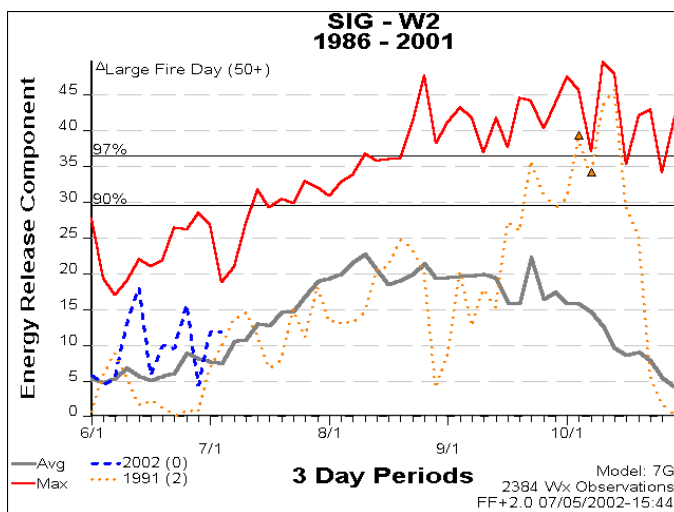


is near or slightly below average. Current and forecast information indicates that Western Washington should have a below average fire season coming primarily during a few “East Wind” days in September and early October.

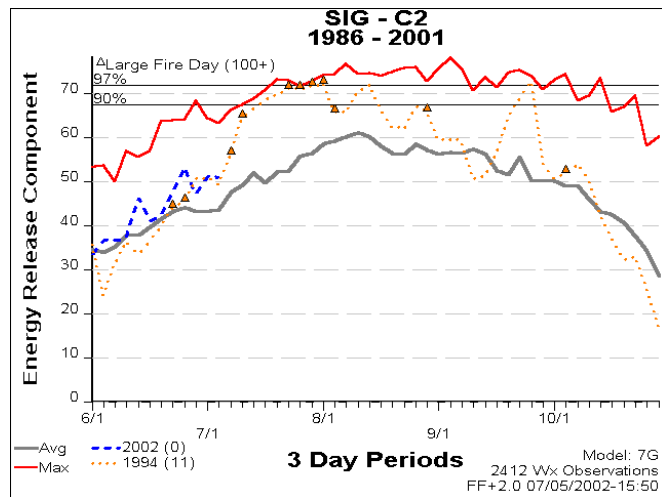
Eastern Washington. Near to above normal rain fell across most of eastern Washington in June. However, the Wenatchee, Okanogan and Methow Valleys were very dry. Only .05 inches was measured for the month at Wenatchee and .16 at Winthrop. Spokane was one of the wetter locations with 1.49 inches. Snow remained in the higher Cascades above 6,000 ft. The latest Palmer Drought Index shows moderate to severe drought in portions eastern Washington. Earlier reports from the Tonasket RD indicate full consumption of 1,000 hr fuels on prescribed burns. July, August and September will be seasonably warm and dry. ERCs are well above average for July 1. Eastern Washington should have a near to above average fire season with the greatest threat in the mid and lower elevation fuels which will be dry enough for large fires in the pine and grasslands. Improved moisture conditions should mitigate the threat of large fires in higher elevation timber fuels.



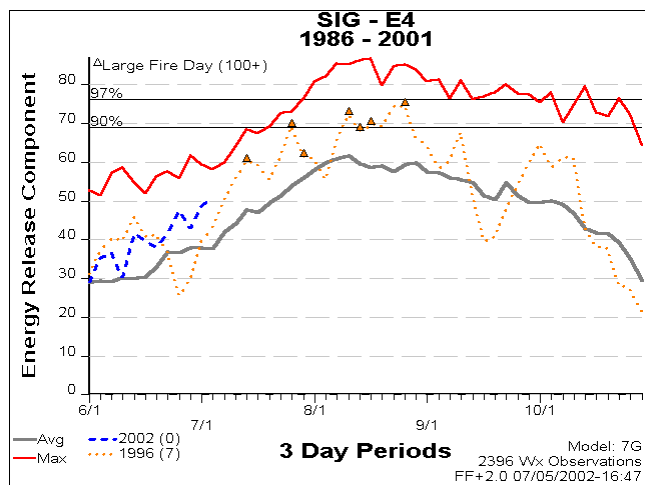
Western Oregon (except Southwest). Near to slightly below normal rainfall occurred in June. However, Heavy rain fell the 28<sup>th</sup> with Portland setting a daily rainfall record of .95 inches. Water year precipitation amounts remain above normal. Snow still lingers in the northern Cascades above 5,500 ft. The Mt. Hood Snotel site at 5,400 ft has 20.1 inches of water equivalent on July 1 compared to last year’s snowmelt date of June 20. The Palmer Drought Index shows near normal conditions throughout western Oregon. July, August and September are forecast to be seasonably warm and dry. ERCs are near average. Based upon this scenario, western Oregon should experience a near to below average fire season coming primarily during a few “East Wind” days in September and early October.



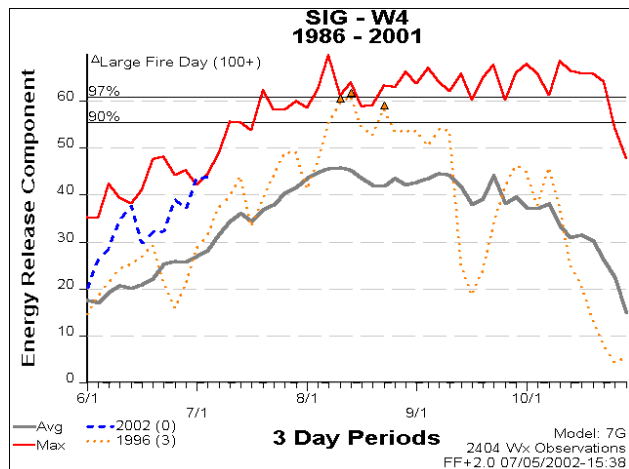
Central Oregon. June was generally dry in central Oregon. Redmond received only .05 inches and Bend .12 inches. Klamath Falls received the most rainfall with .82 inches. The Palmer Drought and Drought Monitor charts indicate moderate drought in central Oregon. The outlook for July, August and September is for seasonally dry and warm weather. ERCs are slightly above average for the date. Central Oregon, which includes the Ochoco and Deschutes NFs, the Prineville BLM and the Warm Springs Agency, has the potential for an above average fire season, especially in the mid and lower elevation pine and grass fuels. The threat of large fires will be less in the higher Cascades due to late snowmelt and higher fuel moisture.



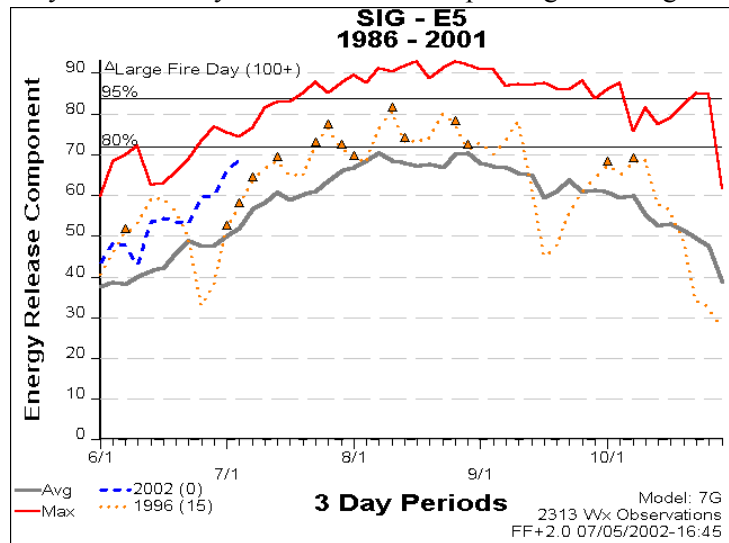
Northeast Oregon. June rainfall varied considerably in northeast Oregon. The northern and eastern Blue Mountains received near to above normal while the southern Blues were drier than usual. The John Day and Malheur River Basins experienced the third consecutive year of early snowmelt. The Palmer Drought and Drought Monitor charts indicate moderate to severe drought in northeast Oregon, especially in the John Day area. The long range outlook for July through September is for seasonally dry and warm weather. ERCs are above average for the date. Northeast Oregon has the potential for an above normal fire season west of Interstate 84 (Malheur NF and western portions of the Umatilla and Wallow-Whitman NFs) with large fires possible. The area east of Interstate 84 should see a typical (normal) fire season.



Southwest Oregon. June was very dry in southwestern Oregon. Medford received only .03 of an inch and Roseburg .19 inches. Rainfall totals along the coast were much better. Brookings had 3.68 inches and Gold Beach just over 2 inches. The Palmer Drought chart now indicates moderate drought in southwest Oregon. ERCs are well above average and are near the historical maximum for July 1. The outlook for July, August and September is for seasonally dry and warm weather. Southwest Oregon should experience an above normal fire season in the mid and lower elevations and near normal in the higher mountains.



Southeast Oregon. June was drier than normal in southeastern Oregon with most locations receiving only 40-60% of the usual rainfall. April and May were also dry and this resulted in pushing the drought indices in the moderate to severe category. Although fuel moistures are higher than last year (measured through the Great Basin Live Fuel Moisture program), continued dry weather and drought will allow fuels to dry to critical values. ERCs are above average. A fire potential assessment, produced by the Burns Interagency Fire Zone, indicated there would be fewer lightning fires than last summer. The analysis projected an average to below average number of lightning fires this summer. Even with a potential for fewer starts, southeast Oregon will likely experience a typical fire season with large fires possible.



This is the final fire season assessment. We will continue to update the progress of the fire season via the 10 day assessment product.

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